

PCOS Program Office Mission Studies and Technology Development

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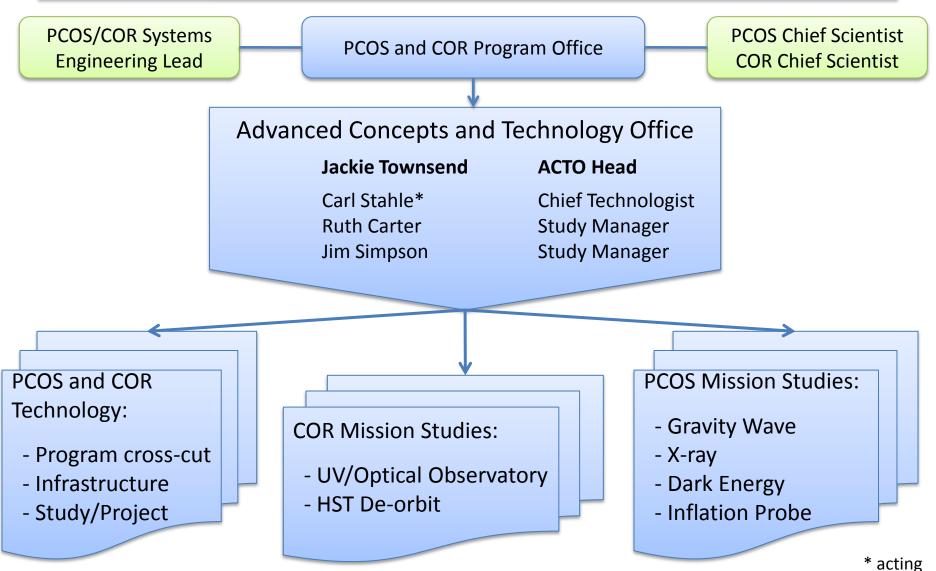
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Advanced Concepts and Technology Office Roles and Responsibilities





Advanced Concepts and Technology Office Roles and Responsibilities



Mission Concept Studies

- Develop program plan for studies accounting for long-term science and technology goals for the program
- Develop study plan for missions identified in the decadal review as directed by HQ
- Implement studies with a reasonable balance of NASA and independent, contracted study teams
- Provide recommended mission funding profiles and conduct trades between available funding and science priorities
- Recommend feasible future mission lines that incorporate the appropriate science requirements, funding profiles and schedules

Technology Management

- Define a program technology management plan consistent with long-term science goals and an implementation plan that is within budget.
- Manage the program technology management plan with a balanced portfolio of technology development activities.
- Identify technologies that enable science across missions, programs, division and the agency and coordinate efforts in these areas with other groups.
- Create technology development plans (including funding requirements) for cross-cutting and future mission technologies.
- Monitor progress and development milestones and feed information back to stakeholders.
- Publish annual technology report that identifies and prioritizes technologies and outlines plans.
- Partner with industry to identify critical technologies and maintain industrial infrastructure for NASA and national needs.

Advanced Concepts and Technology Office Relationships



NASA Centers

- Working Groups
- Technologists
- Tech. developers
- Study teams

Technologists

- NASA HQ, OCT, Centers,
- US agencies
- industry
- academia

NASA HQ PCOS and COR Program Executives

PCOS and COR Program Management

Advanced Concepts and Technologies Office

Science Community

- PAGS (through NAC process)
- Working Groups
- Conferences and Workshops
- Study Teams
- Technology developers

NASA Program Offices and Directorates

- Exoplanet Program
- Explorers
- Office of Chief Tech.

Industry

- PAGS (through NAC process)
- Working Groups
- Study teams
- Study contracts
- Tech. developers

Mission Studies and Technology Development Principles (1 of 2)



- Mission studies and technology development progress best when they are coupled.
 - Technology development that is not tied to a specific mission can spiral into a sandbox with little relevance to missions (push only).
 - Mission concepts without a technology development plan (TDP) can spiral into unattainable or extremely costly requirements (pull only).
- During the concept study phase, the Program Office functions as a community server.
 - We collect ideas from everywhere; we transmit our work everywhere
 - We encourage, enable, advocate and, in some cases, fund input from the community
 - We believe that collaboration improves success rate in a system that is constrained in terms of cost, schedule and technical requirements

Mission Studies and Technology Development Principles (2 of 2)



- Every program dollar for technology development shall be
 - Traceable back to program science objectives
 - Allocated and managed through a vetted, merit-based process for identifying program needs and priorities and selecting technologies for investment
 - Needs and priorities identified with input from the broad community (e.g., annual input from PAGs (through NAC process), open solicitations)
 - Program technology needs, priorities and status published in Program Annual Technology Report
- A single process addresses three different technology bins
 - Program cross-cutting or low TRL technology
 - Unique infrastructure capability that serves the community
 - Mission/project/study specific technology

HQ and Program Office Study Planning Process Block Diagram



Study Plan Tactics

- Study Plan due date
- HQ stakeholders
- · Teaming during study planning

Study Drivers

- Objective
- End date and major milestones
- Degree of public engagement
- Study budget
- Other programmatic issues

Known Mission Drivers

- Programmatic Drivers
 - Budget bogie/mission type
 - Partnerships
 - center, agency, international
 - Key players and stakeholders
 - Relevant previous work
- Technical Drivers
 - Science objectives
 - Operations parameters (orbit, launch date, wavelength...)
 - · Enabling technology

HQ requests study

HQ and Program Office

- Define Study Plan Tactics
- Identify Study Drivers
- Identify Known Mission Drivers

Advanced Concepts and Technology Office

Develop Initial Study Plan

HQ and Advanced Concepts and Technology Office

Iterate Study Plan

reach agreement on approach, milestones, budget

Advanced Concepts and Technology Office

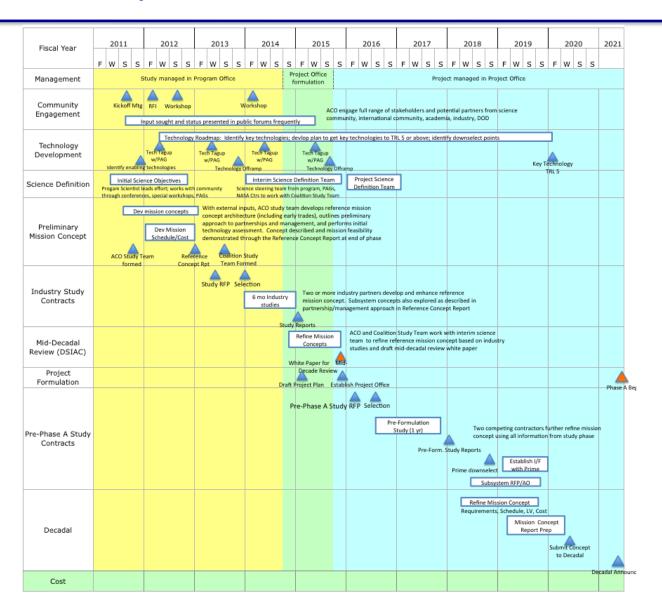
Implement Study Plan

Initial Study Plan

- Define any unresolved drivers
- Develop approach for Study and Project phases regarding:
 - Structure for partnerships, teams and contracts
 - Science definition
 - Mission concept development
 - Technology Roadmap
 - Milestones related to
 - Stakeholder engagement
 - Project Office handover
- Build Milestone Chart through end date
- Estimate cost for proposed Study Phase



Initial Study Plan Milestone Chart





2010 Template Study Milestone Chart

